TERRANEXT
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June 13, 2019

Caitlyn P. Nichols
NYSDEC Region 2, NYC
Division of Environmental Permits
1 Hunters Point Plaza
47-40 21st Street
Long Island City, New York-11101-5407

Subject: **Starrett City Power Plant Permit Modification [Mod 2] Application**
New Diesel Generators – Air Permit to Construct / Operate
Response to NOI dated 5/30/2019

Re: **[1]** **Notice of Incomplete Application [NOIA], Batch No. 843309**
[2] **Starrett City, Inc. - Title V Permit**
Title V Permit ID No. 2-6105-00263/00008, Renewal 3, Mod 1
Effective date 8/13/2018; Facility Level Condition 5
[3] **Notification of installation of five temporary emergency generators dated 10/15/2018**

Dear Ms. Nichols,

This letter with attachments responds to the Department's NOIA [reference 1]. Per instructions, two hardcopies are being mailed to you. An electronic copy is being e-mailed to you.

Required item 1 – Table P231-3, Exhibit 4 of the application indicates some discrepancies between reported emissions and supporting documentations for the engines. Please clarify.

Response:

A revised Table P231-3 [Rev 1] is attached. It corrects errors in the diesel fuel consumption and hours of operation for year 2018 for emissions sources DG01, DG02, and DG03 [existing three Nordberg engines]; and diesel fuel consumption for DG03 in year 2014. The presented hours and consumption rates match those in the annual emission statements previously submitted to the Department. The table P231-3 was submitted prior to receiving corrected data for the 2018 emission statement.

Table P231-3 Rev 1 calculates the baseline emission rates for NOx and VOC per the original table P231-3 utilizing the presumptive NOx RACT limit for ICEs of 2.3 grams per Bhp-hr instead of the Title V alternative limit 5.4 grams per Bhp-hr from a NOx RACT determination by the Department dated 5/11/2005. A new table P231-7 is provided that summarizes the official reported emission tests of DG01, DG02 and DG03 conducted in October 2017, May 2015, and September 2011. All three engines were tested in 2015. DG01 and DG02 were tested in 2017. DG01 and DG03 were tested in 2011.

During this contemporaneous period, the consecutive 24-month period of highest annual emission rates occurred for years 2015 and 2016. Therefore, for calculating the baseline period emissions rates, the maximum load ratings during testing of the engines in 2015 have been used in the calculation of hourly NOx emission rates – 14 for DG01, 14.4 for DG02, and 13.3 for DG03. The engine hours of annual operation for this two-year period remains the same in Table P231-3 Rev1 as in the original table P231-3.

Table P231-3 Rev 1 presents the calculations of actual annual NOx emission rates for each engine for each year. For years 2014 through 2016, the maximum tested engine ratings reported in the May 2015 tests are utilized. For years 2017 and 2018, the maximum tested engine ratings reported in the October 2017 tests for DG01 and DG02 are utilized. For DG03 in years 2017 and 2018, the engine ratings reported in the May 2015 tests are utilized.

As shown in Table P231-3 Rev 1, the baseline annual NOx emission rated is 37.82 tons representing years 2015-2016. For the purpose of the application, this baseline rate is divided equally among the three emissions sources DG01, DG02, and DG03; 12.61 tons per year for each source.

Since the baseline period NOx emission rate presented in table P231-3 Rev 1 [37.82 tons] has slightly changed from the baseline NOx emission rate in table P231-3 [36.29 tons], revised tables P231-5 [Rev 1] and P231-6 [Rev 1] are also provided. All revised P231 tables and new table P231-7 are provided as Attachment 1. Also, a revised Part 231 analysis [specifically worksheets 1, 3A, 5A, 5B, and 7] are provided as Attachment 2.

The revised worksheets update the commencement dates of construction and operation to, respectively, Q1 2020 and Q2 2020. The contemporaneous period is revised to 1/1/2015 to 12/31/2019. There is no annual data for year 2019. The prospective use of the emission sources DG01, DG02, and DG03 in year 2019 reflects their use in 2018. In table P231-3 Rev 1, years 2015 and 2016 remain in the modified contemporaneous period. Consequently, the emission calculations analyses provided in tables P231-3 Rev 1, P231-5 Rev 1 and P231-6 Rev 1 remain valid.

The revised worksheets include a signed worksheet 1 with a current date.

Required item 2 – The facility is required to submit revised ERCs Quantification Forms and Use of ERCs form.

Response:

Attachment 3 presents the ERC Quantification forms and the Use of ERCs form. Both are signed by the authorized representative.

Concerning the ERC Quantification form:

- The emission source ID# associated with this form are DG01, DG02 and DG03;
- NOx and VOC are the contaminants [A.1];

- The emission reduction date is identified as 01/01/2020, the beginning of the Q1 2020 period for the construction of the new diesel generators, DG04 & DG05 [A.2];
- The actions that will be taken are – [1] the re-categorization of current emission sources DG01, DG02, and DG03 to "emergency generators" each with a maximum 500 annual operating hours limit associated with installation and operation of two new emission sources, DG04 and DG05, diesel generators each rated at 4MW [A.3];
- The base line actual emissions for NOx and VOC are, respectively, 37.82 and 3.06 tons per year [B.1];
    - These emission rates are shown on Table P231-3 Rev 1 as associated with the baseline period years 2015 and 2016. The NOx emission rate is based upon the presumptive NOx RACT rate of 2.3 grams per bhp-hr.
- The applicable other control requirement [OCR] that may be applicable to the emission sources dates back to 5/11/2005 [NYSDEC ENB Region 2 Completed Applications 5/11/2005 Kings County] when an alternative NOx RACT limit of 5.4 grams / bhp-hr was approved [B.2];
- The baseline actual emissions reflecting OCR for NOx are 88.8 tons;
    - This is a prorated calculation based on the ratio of 5.4/2.3 [grams / bhp-hr] as shown in table P231-3 Rev 1.
- The NOx PTE, 21.17 tons, is based on operating the emission sources DG01, DG02 and DG03 as emergency generators, each with a maximum 500 hours annual operation as shown by table P-231-4.

Concerning the Use of ERC form:

- The use of ERCs from the quantification form are presented on an individual emission sources basis. The "or" should be replaced by the "[and]" to include DG03.

Required item 3 – The first page of submittal, dated April 1, 2019, states the two new caterpillar engines will be emergency generators, but the application indicates they are for normal power supply. Please clarify.

Response:

The first page submittal contained an error is stating the two new generators will be emergency generators. Attachment 4 presents a corrected letter designated Revision 1 in the subject.

Required item 4 – Please submit the Certificate for Conformity for the new engines.

Response:

Attachment 5 presents the Certificate of Conformity for the new engines. The new generators are being provided by the engine manufacturer with third party SCR catalyst system to bring the emissions of the engines into compliance with Tier-4F.

We trust that this response to your NOI is satisfactory for your needs to continue to process the application. If you should have any questions, comments, or need additional information, please advise me at [732] 377-2040 or via email at rrao@terranext.net.

Very truly yours,

Richard Rao
Director, Northeast Operations
Terranext, LLC

cc: Robert G. Bolt, PE, NYSDEC Region 2
Cicily Nirappel, NYSDEC Region 2
Eric Magidson, The Brooksville Company
John Friel, Starrett City Power Plant

Attachments:

- 1 – Tables P231-3 Rev1, P231-5 Rev1, P231-6 Rev 1, and P231-7 [new]
- 2 – Part 231 / Netting Analyses Rev 1
- 3 – ERC Quantification and Use of ERC Forms
- 4 – April 1, 2019 Rev 1 dated
- 5 – Certificate of Conformity – New Engines

Attachment 4

Revised April 1, 2019 Letter

TERRANEXT
A Women-Owned Business Enterprise

371 Hoes Lane, Suite 200, Piscataway, NJ 08854
Phone: (212) 736-9191 Fax: (212) 268-1512

June 6, 2019

NYSDEC Regional Permit Administrator
NYSDEC Region 2, NYC
Division of Environmental Permits
1 Hunters Point Plaza
47-40 21st Street
Long Island City, New York-11101-5407

Subject: **Starrett City Power Plant Permit Modification [Mod 2] Application – Rev 1**
New Diesel Generators – Air Permit to Construct / Operate

Re: **[1]** **Starrett City, Inc. - Title V Permit**
Title V Permit ID No. 2-6105-00263/00008, Renewal 3, Mod 1
Effective date 8/13/2018; Facility Level Condition 5
[2] **Notification of installation of five temporary emergency generators dated 10/15/2018**

Dear Sir,

On behalf of the owner, BSC Owner LLC [reference 1], Terranext hereby submits the subject application for the installation of two [2] new generators. The two new diesel fired generators, each nominally rated at 4 megawatt [MW] electric power generation /5646 brake horsepower, are designated emission unit U-00002 emission sources DG04 and DG05. Currently, the facility is permitted to operate four [4] boilers as emission unit U-00001 and three [3] diesel electric generators as EU U-00002, all located in "building 1". The three diesel generators, designated emission sources DG01, DG02 and DG03, are relatively old Nordberg engines. The application encompasses the re-classification of the three old Nordberg diesel generators from emission sources to exempt sources as emergency generators.

As stated in the notification for the temporary generators [reference 2], these generators will be removed from the site when the new generators are operational or sooner.

The application is presented in the four attached exhibits. Exhibit 1 presents the application form. Exhibit 2 presents supporting documentation: emission calculations, plot plan, process flow diagram, methods used to determine compliance form, and the form for list of exempt activities. Exhibit 3 presents equipment data sheets: Caterpillar manufacturer's performance data sheet for the new generators, Miratech manufacturer's performance warranty for the emission control system, and elevation drawings of the engine enclosure and the emission reduction control system. Exhibit 4 presents the associated Part 231 / Netting analyses for the two new emission sources, DG04 and DG05, and the re-classification of the Nordberg diesel generators as emergency generators.

The Mod 2 application redefines emission unit U-00002 as consisting of only two emission sources, DG04 and DG05, eliminating emission sources DG01, DG02 and DG03. Each new diesel generator is a Caterpillar model CAT175-20 within its own enclosure with its own Miratech emission control system located above the housing with direct connection to the engine exhaust as shown in the elevation general arrangement drawings Exhibit 3-3. The two new emission sources are located along the eastern Starrett property boundary on the west side of Van Siclen Avenue as shown in Exhibit 2-2. For the purpose of the Title V permit modification, new emission source DG04 is considered the northern most diesel generator with its enclosure designated building 2A. New emission source DG05 in parallel to the DGO4 is the southern most diesel generator with its enclosure designated building 2B.

The Miratech emission control system for each engine consists of three control devices, a diesel particulate emission filter, and oxidation catalyst for CO and NMHC emission reduction, and a selective reduction catalyst [SCR] for NOx emission reduction. The emission control for each new generator are, respectively, designated SCR04 and SCR05. The SCR NOx control system utilizes a 32% urea solution. This system represents the LAER, providing a 92.7% NOx emission reduction from the direct engine exhaust NOx emission rate.

Exhibit 2-1 presents Tables 1, 2, 2A, 3, 3A 4, 5, 6, 7, 8, 9, 10, 11 and 12 that support emission PTE and actual emission calculations. Table 1 lists the combustion emission sources at the facility with capacity ratings. The three Nordberg engines [DG1, DG2, DG3] are listed as emergency generators each with a maximum annual hour of operation limit at 500 hours. Mod 2 does not alter any aspect of the boilers. Table 2 summarizes the existing facility wide PTE criteria emission rates. The NOx rate is 605 tons. Table 2A summarizes the Mod 2 facility wide PTE criteria emission rates. The NOx rate is 293 tons, which represents a 52% decrease in the annual emission rate. Tables 3 and 3A, respectively, present the existing facility wide and Mod 2 facility wide actual emission rates for criteria pollution. The facility is currently on a firm-gas firing basis. Table 4 presents the PTE and actual emission rates for the boilers firing gas, with the actual emissions based on an anticipated capacity factor of 50%. Table 5 presents emission rates for the boilers firing #2-oil. Table 6 presents PTE and actual emission rates of the three existing Nordberg diesel generators. Table 7 presents the emission rates for the new diesel generators. Both PTE and actual rates are based upon a limit of 70% capacity factor, which has been set via the Part 231 / Netting analysis [Exhibit 4] to alleviate the need for purchasing off-set NOx emission allowances. Table 8 presents PTE and actual emission rates for the three Nordberg engines as emergency generators. The PTE rates are based upon 500 hours of operation for each engine. The actual rates are based upon 30 hours of operation annually for each engine. Table 9 – 12 present CO_2eq PTE and actual emission for the existing facility and Mod 2 facility.

Exhibit 3 presents the manufacturer's data / specification sheets. Exhibit 3-1 presents the data for the Caterpillar CAT 175-20 model diesel generator rated at 4000 Kw / 5647 engine brake horsepower. Direct exhaust emission rates are listed on page 3 of the document. Exhibit 3-2 presents the Miratech emission control system. The "Application & Performance Warranty Data" page presents the calculated emission reduction for NOx and PM_{10}, respectively, at 92.7% and 66.7%. The NOx emission rate is 0.5 grams per bhp-hr, which essentially represents LAER. Exhibit 3-3 presents the general arrangement elevations of one engine enclosure with the Miratech emission control system located above the enclosure. The arrangement drawings are typical for

DG04 and DG05. Both units will be placed alongside each other with the length of the engines in the east-west direction on the plot plan.

Exhibit 4 presents the associated Part 231 / netting analysis for the new diesel generators and the re-classification of the three Nordberg engines as emergency generators. Worksheets 1 through 7 are completed. The analyses are supported by Tables 231-1, 231-2, 231-3, 231-5, and 231-6. As shown on Table 231-2, the analysis is based on limiting each new diesel generator to a 70% capacity factor or 6132 annual hours of operation at 5646 brake horsepower. The analyses conclude that off-set emissions are not required for the installation of the new diesel generators. The installation of the Miratech emission reduction system is essentially LAER technology.

We trust the application is sufficient for you to process and grant a permit modification. If you should have any questions, comments, or need additional information, please advise me at [732] 377-2040 or via email at rrao@terranext.net.

Very truly yours,

Richard Rao
Director, Northeast Operations
Terranext, LLC

cc: Robert G. Bolt, PE, NYSDEC Region 2
Cicily Nirappel, NYSDEC Region 2
Eric Magidson, The Brooksville Company
John Friel, Starrett City Power Plant

Attachments:

- Exhibit 1 – Modification 2 Application
- Exhibit 2 – Support Documents
- Exhibit 3 – Manufacturers' Data / Specification Sheets
- Exhibit 4 – Part 231 / Netting Analyses

Attachment 5

Certificate of Conformity

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2018 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Caterpillar Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: JCPXL106.NZS-003

Effective Date: 06/07/2017

Expiration Date: 12/31/2018

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 06/07/2017

Revision Date: N/A

Model Year: 2018
Manufacturer Type: Original Engine Manufacturer
Engine Family: JCPXL106.NZS

Mobile/Stationary Indicator: Stationary
Emissions Power Category: kW>560
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control, Engine Design Modification

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.